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Romig

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(54) **LATCHING SYSTEM FOR SLIDING WINDOW**

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E05C 7/00 (2006.01)

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

244,665	A *	7/1881	Preston	292/25
530,862	A *	12/1894	Teed	292/42
621,574	A *	3/1899	Kinsey	292/24
1,083,173	A *	12/1913	Zeckhauser	292/5
1,143,653	A *	6/1915	Smith	70/97
1,264,814	A *	4/1918	Kornstein	70/116
1,421,197	A *	6/1922	Ferrara	70/82
1,536,268	A *	5/1925	Rasmussen	292/25
1,540,088	A *	6/1925	Rasmussen	292/25
1,574,023	A *	2/1926	Crompton et al.	292/24
2,967,418	A *	1/1961	Donald	70/71
3,181,905	A	5/1965	Bisbing	
3,214,948	A *	11/1965	Modrey	70/99
3,360,290	A *	12/1967	De Gray	292/6
3,667,793	A	6/1972	Varrin et al.	
4,124,054	A	11/1978	Spretnjak	
4,322,914	A	4/1982	McGaughey	
4,438,965	A	3/1984	Stearns	
4,489,965	A	12/1984	Taylor	
4,554,907	A *	11/1985	Overley et al.	126/191
4,695,081	A	9/1987	Boykin	
4,850,139	A	7/1989	Tiesler	
4,920,698	A	5/1990	Friese et al.	

(Continued)

FOREIGN PATENT DOCUMENTS

GB 2275500 * 2/1994

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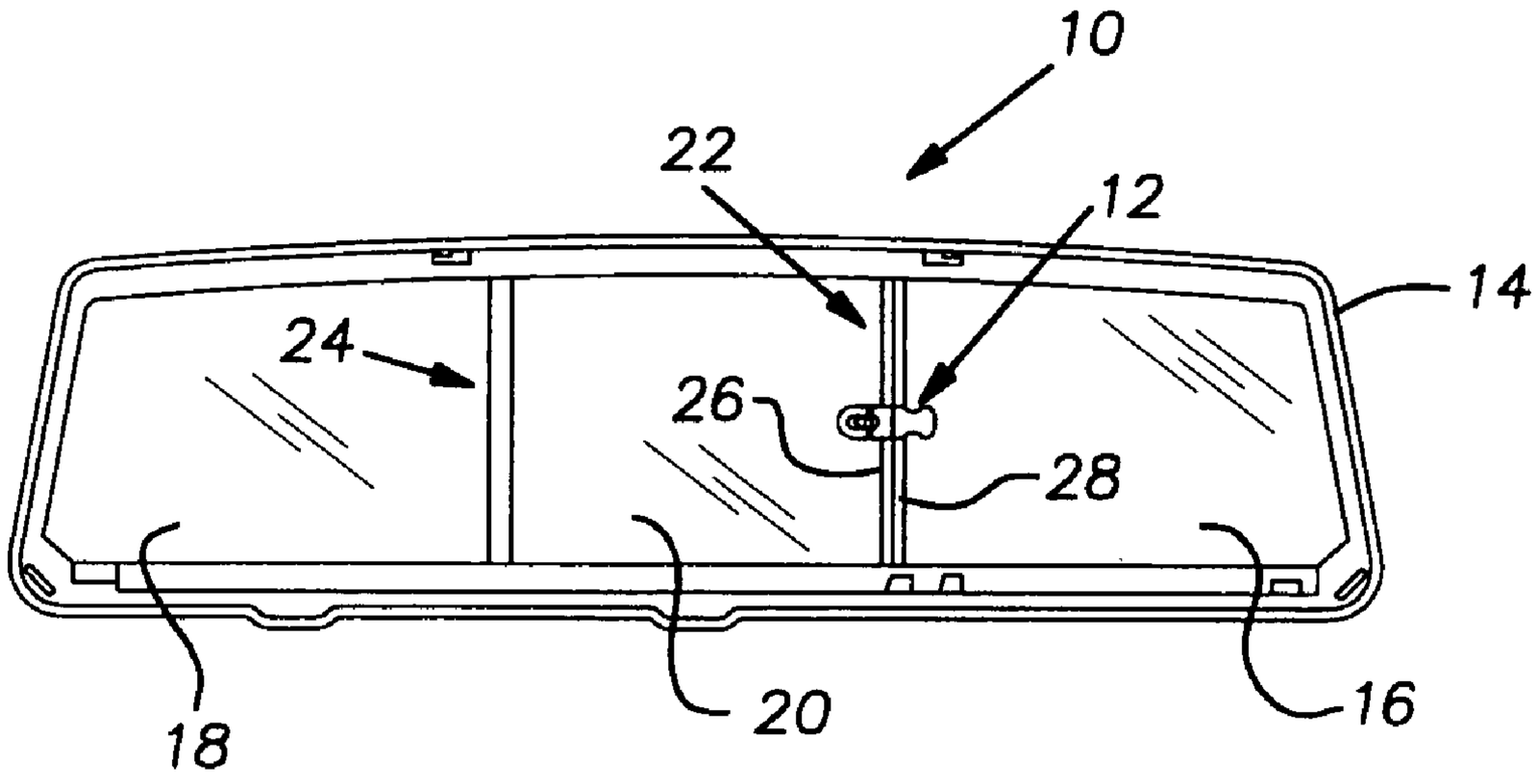
(57) **ABSTRACT**

A latch system for securing a sliding window to a fixed member, the latch assembly including a latch housing, a catch housing, and a latch assembly. The latch assembly includes first and second latch arms and an actuator. The latch arms are pivotally secured to the latch housing and include first, actuated ends that are disposed within the latch housing and second, latching ends that are disposed outside of the latch housing and received by the catch housing. The actuator is slidably secured to the latch housing and operable to engage the latch arms' actuated ends so as to pivot the latching ends out of engagement with the catch housing and thereby permit the latch housing and the window associated therewith to move relative to the fixed member.

19 Claims, 3 Drawing Sheets



U.S. PATENT DOCUMENTS

4,936,368	A	6/1990	Philbeck et al.	
4,961,600	A *	10/1990	Points et al.	292/25
5,028,082	A	7/1991	Kronbetter	
5,042,855	A	8/1991	Bennett et al.	
5,431,461	A	7/1995	Andersen, III et al.	
5,442,880	A	8/1995	Gipson	
5,462,323	A	10/1995	Benninger	
5,516,162	A *	5/1996	Takaishi	292/37
5,544,924	A *	8/1996	Paster	292/6
5,620,215	A	4/1997	Janeway	
5,711,554	A *	1/1998	Brown et al.	292/19
5,715,631	A *	2/1998	Kailian et al.	49/450
5,725,260	A *	3/1998	Eikmeier et al.	292/129
5,775,029	A	7/1998	Buening	
5,799,444	A	9/1998	Freimark et al.	
5,799,449	A	9/1998	Lyons et al.	
5,822,922	A	10/1998	Grumm et al.	
5,996,284	A	12/1999	Freimark et al.	
6,174,003	B1 *	1/2001	Smart	292/109
6,412,225	B1	7/2002	McManua	
6,546,671	B1 *	4/2003	Mitchell et al.	49/185
2002/0093203	A1	7/2002	Moretz	
2002/0148163	A1	10/2002	Warner et al.	

* cited by examiner

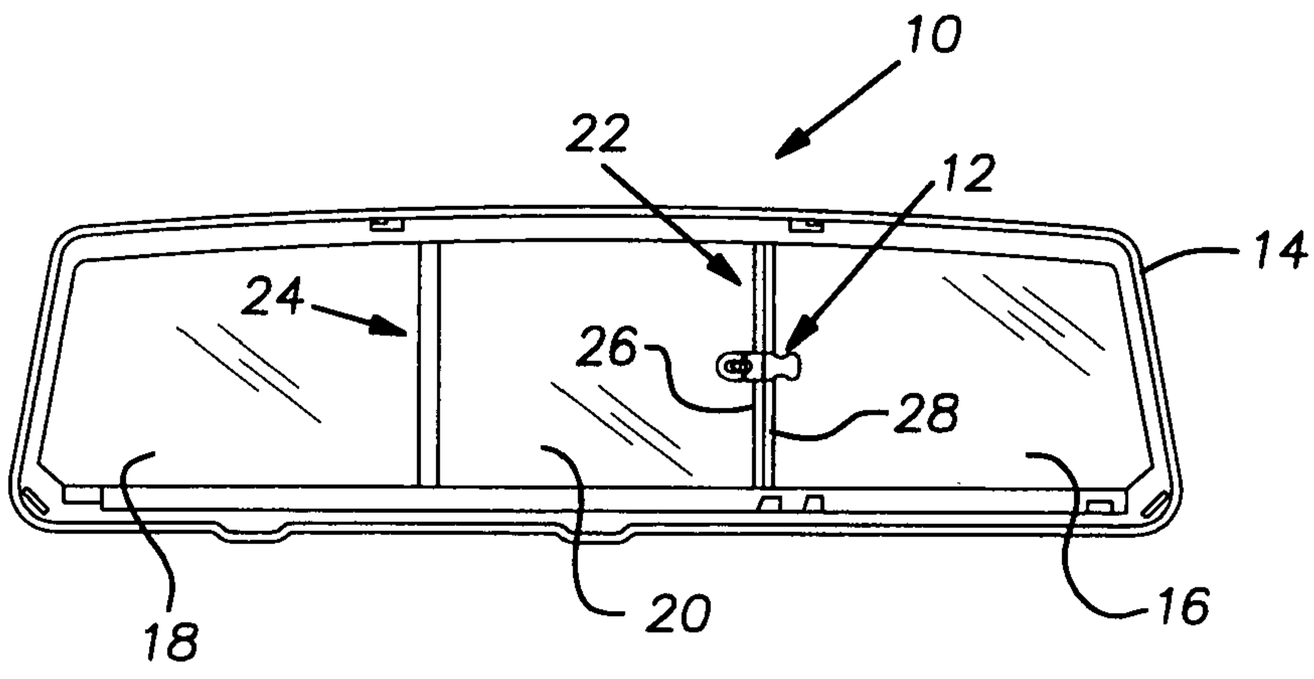

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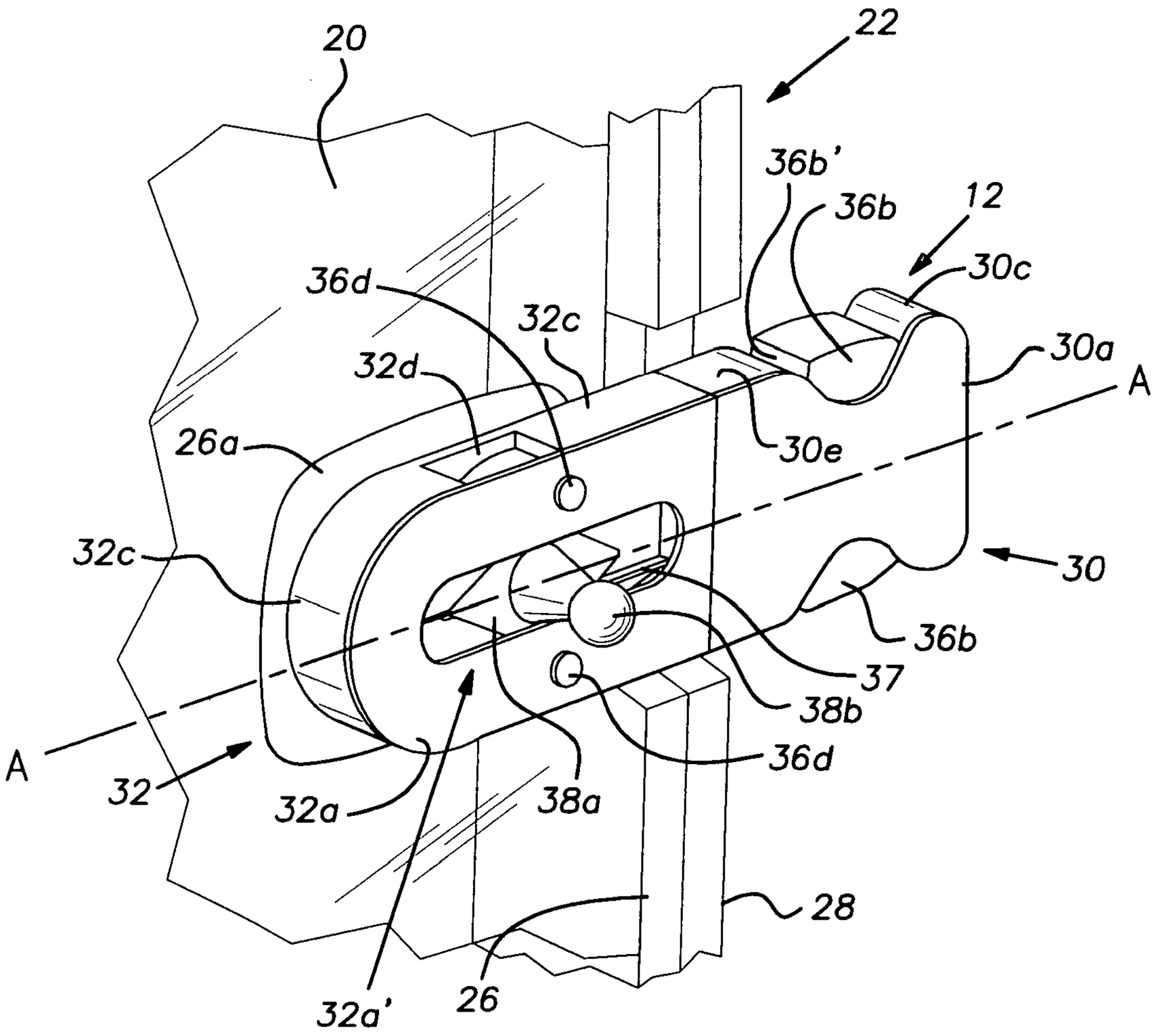
FIG. 1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38a
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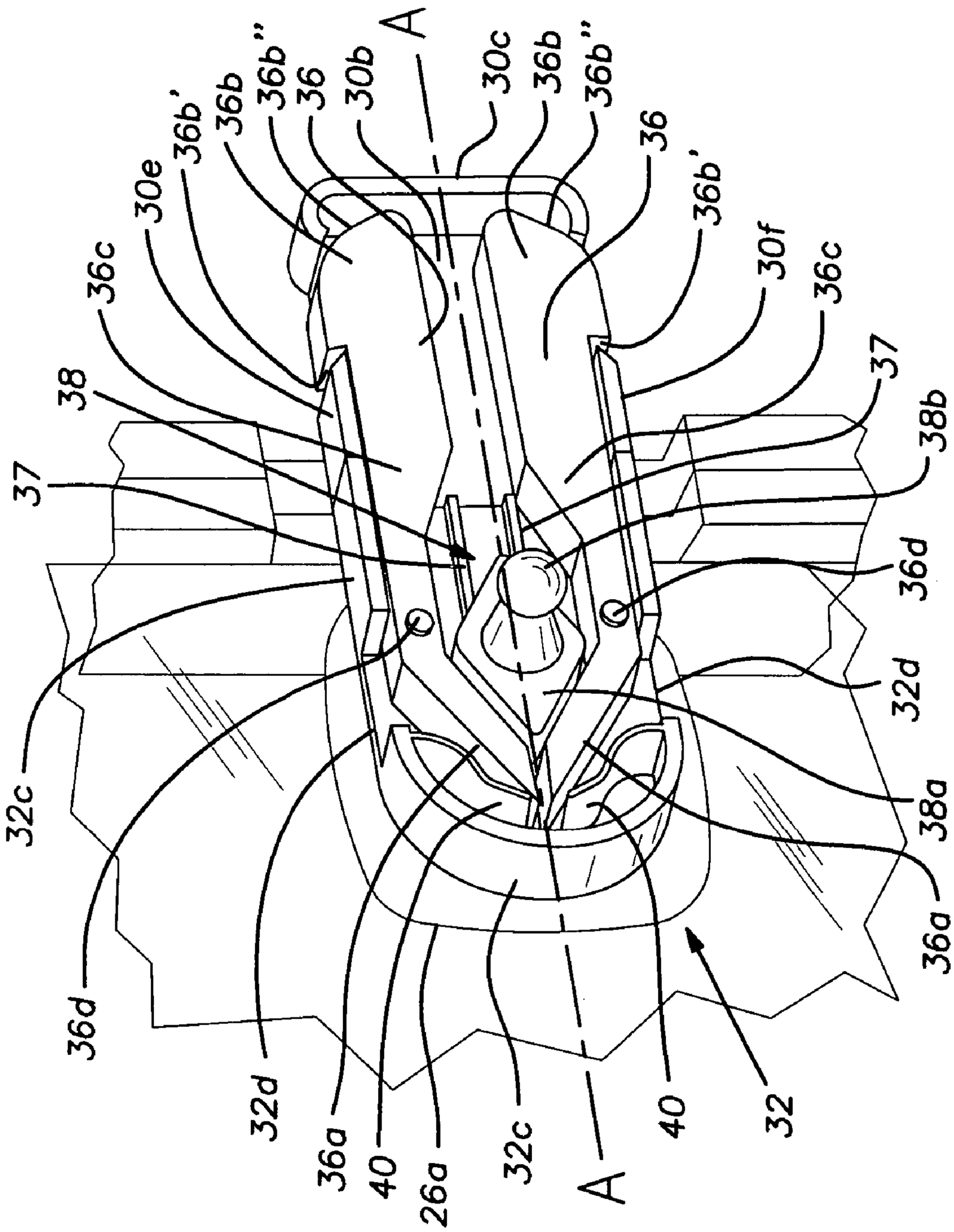
32a'
26

FIG. 2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30c
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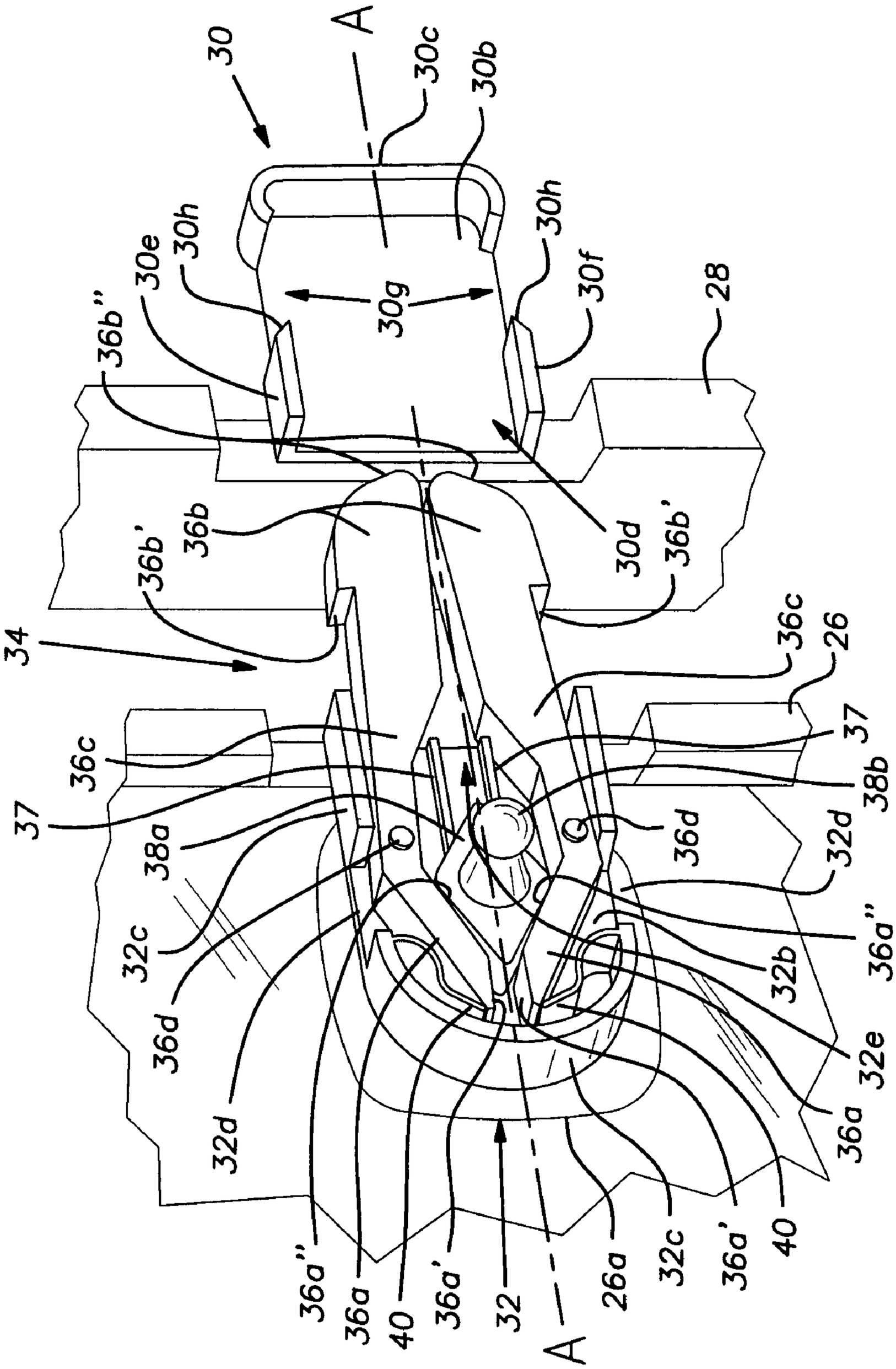
FIG. 3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36c
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38a
38b
36d
32d
32c
36d
32b
36a''
32d
32e
36a
36a''
36a
40
36a'
32
A
26a
32c
36a'
40

FIG. 4

LATCHING SYSTEM FOR SLIDING WINDOW

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is generally directed toward a latch for a sliding window and, more particularly, toward a latching system for closing and locking a rear center window of a manually operated sliding window assembly.

2. Description of Related Art

In many types of vehicles, such as pickup trucks, it is desirable to provide a sliding window in the rear windshield for ventilation purposes. Such sliding windows typically have a latch or lock to secure the sliding window in a closed position and to prevent opening of the sliding window from the outside.

U.S. Pat. No. 5,442,880 is representative of such sliding window latching assemblies, and includes a latch that is disposed on the sliding window's frame, and a latch keeper that is secured on the fixed window's frame. When the latch is secured over the latch keeper, the sliding window is affixed to the fixed window's frame so as to prevent the sliding window from being slidably opened. Unfortunately, it has been found that inward pressure exerted on the sliding window at the latch will cause the sliding window to deform or bow inwardly, thereby disconnecting the latch from the latch keeper and permitting the sliding window to be opened. Naturally, this is not a desirable structure since it permits unwanted entry into the vehicle.

Other latches have been developed to prevent such undesirable unlatching of the window lock. See, for example, U.S. Pat. No. 4,124,054, wherein a clasp-type latch is disposed over adjacent portions of a pair of sliding window units. Unfortunately, with the '054 design, one-handed operation, which is desired for vehicular installations, is difficult. Moreover, operation of the window lock requires movement in directions other than the direction of intended window movement, and makes opening and closing of the windows rather cumbersome.

Therefore, there exists a need in the art for a latching assembly for a sliding vehicle window that is adapted for one-handed operation, and in which the opening and closing operations can be performed intuitively and wherein the window is resistant to being opened from the outside.

SUMMARY OF THE INVENTION

The present invention is directed toward an improved latch assembly for a sliding window that eliminates or reduces the problems encountered in the art. The present invention is further directed toward an improved latch that prevents opening of the window from the outside, and which permits ergonomic one-handed opening and closing of the window by the user.

In accordance with the present invention, a latch system for a slidable window includes a catch housing, a latch housing, and a latch assembly. The catch housing is secured to a fixed member, the latch housing is secured to the slidable window, and the latch assembly is adapted to releasably connect the latch housing with the catch housing.

In further accordance with the present invention, the latch assembly includes a latch arm and a latch actuator. The latch arm has a first, actuated end, an elongated body portion, and a second, latching end. The actuated end is received within the latch housing and the body portion projects from the latch housing such that the latching end of the latch arm is

disposed outside of the latch housing. The latch arm is pivotally secured to the latch housing and is biased so as urge the latching end into engagement with the catch housing.

In further accordance with the present invention, the latch actuator is received in the latch housing and is slidably movable in a direction relatively away from the catch housing and against the latch arm's actuated end so as to pivot the latch arm's latching end out of engagement with the catch housing and thereby release the sliding window from the fixed window.

BRIEF DESCRIPTION OF THE DRAWINGS

These and further features of the invention will be apparent with reference to the following description and drawings, wherein:

FIG. **1** is a front elevational view of a window unit including a manually operated sliding glass member;

FIG. **2** is an enlarged perspective view of a latching system according to the present invention in a latched condition;

FIG. **3** is view similar to FIG. **2** but with portions removed to more clearly illustrate the latching operation; and,

FIG. **4** is view similar to FIG. **3**, but with the latching system in an unlatched condition.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to FIG. **1**, a vehicle window unit **10** incorporating a latching system **12** of the present invention is illustrated. The window unit **10** includes a peripheral window frame **14** surrounding a stationary right window **16**, a stationary left window **18**, and a sliding center window **20**. Preferably, the peripheral window frame **14** includes upper and lower tracks (not shown) in which the center window **20** is slidably guided in use.

A first sealing assembly **22** extends along a left-hand edge of the right window **16** and a second sealing assembly **24** extends along the right-hand edge of the left window **18**. The sealing assemblies **22**, **24** cooperate to provide a watertight seal between the associated edge of the center window **20** and the left and right window **16**, **18** when the center window **20** is closed. The first sealing assembly **22**, which is associated with the right and center windows **16**, **20**, has the latching system **12** of the present invention secured thereto, and will be discussed briefly hereinafter as it relates to the present invention. The second sealing assembly **24**, which is associated with the left window **18** and the center window **20**, is unrelated to the present invention and preferably is generally conventional and, therefore, will not be discussed further hereinafter.

The first sealing assembly **22** includes a center trim piece **26**, which is secured over the right-hand edge of the center window **20**, and a frame or mullion piece **28**, which is secured to the left edge of the right window **16**. Preferably, the trim piece **26** includes a mounting portion **26***a* that serves as a raised platform to which a latch housing **32**, described hereinafter, is secured.

The trim piece **26** and the frame piece **28** are shaped so as to engage one another in a face-to-face manner, and so as to seal the union between the center and right windows **20**, **16** as the center window **20** moves into the closed position. One

or more lengths of weather stripping (elastomeric seal material or felt-like fabric seal material, not shown) may be provided by the trim piece **26** and/or frame piece **28** to facilitate sealing therebetween.

For example, the trim piece **26** may be U-shaped in cross-section so as to provide a channel into which the lateral edge of the center window **20** is inserted. Likewise, the frame piece **28** may, in part, provide a U-shaped cross-sectional profile wherein the opening in the "U" is facing toward the center window **20** so as to slidingly and sealingly receive the center window trim piece **26**. In this arrangement, seal material disposed on either the trim piece **26** or the frame piece **28** will permit formation of a watertight seal between the trim piece **26** and the frame piece **28**. Insofar as it is believed apparent that numerous alternative sealing arrangements are known in the art and may be used interchangeably with that described herein, the present invention is not limited to use in conjunction with the aforementioned window sealing arrangement.

With reference to FIGS. **2–4**, the latching system **12** includes a catch housing **30**, which is secured to the fixed window frame (i.e., the frame piece **28** of the right window **16**), the latch housing **32**, which is secured to the movable window frame (i.e., the mounting portion **26***a* of the center window trim piece **26**), and a latch assembly **34**.

The catch housing **30** is affixed to the frame piece **28**, and is preferably integrally molded or formed from an appropriate thermoplastic material. Naturally, the catch housing **30** may be made from metal or other appropriate materials, if desired. The catch housing **30**, which defines a generally hollow body, includes solid front and rear walls **30***a*, **30***b*, a solid right end wall **30***c*, an open left end **30***d*, and upper and lower walls **30***e*, **30***f* that have slotted openings **30***g* formed therein. The front, rear, upper, and lower walls **30***a*, **30***b*, **30***e*, **30***f* cooperate to define the opening **30***d* at the left end of the catch housing **30** through which the latch assembly **34**, described hereinafter, slidably extends. An edge surface **30***h* defining a portion (i.e., the leftward extent) of each slotted opening **30***g* serves as a latch keeper or engagement surface that receives or engages a portion of the latch assembly **34**, as will be apparent from the following discussion. The catch housing **30** may be integrally secured to the frame piece **28** by conventional fasteners (not shown) or may be affixed by conventional plastic joining techniques, such as adhesives or welding (sonic; IR; laser welding), either directly or by use of intermediate joining materials.

The latch housing **32** includes a front wall **32***a*, a rear wall **32***b*, and a sidewall **32***c* that cooperate to define a generally hollow body. The rear wall **32***b* is preferably integrally formed or molded with the sidewall **32***c*. The front wall **32***a* is preferably formed separately from the rear wall **32***b* and sidewall **32***c* and is secured via known welding or adhesive bonding techniques during assembly.

The sidewall **32***c* extends around three sides of the latch housing **32** and, in the illustrated embodiment, has top and bottom openings **32***d* formed therein. The front wall **32***a* has an elongated opening **32***a*' formed through which a portion of the latching assembly **34** extends, as will be apparent from the following discussion. Moreover, in the illustrated embodiment, the front wall **32***a*, rear wall **32***b*, and sidewalls **32***c* cooperate, at the rightward facing end of the latch housing **32**, to define an opening **32***e* through which the latch assembly **34** projects. The inner surface of the rear wall **32***b* has a pair of ribs or rails **37** formed thereon that slidably receive and guide a portion of the latch assembly **34**, described hereinafter. The rails **37** are preferably spaced equal distances from, and parallel to, the longitudinal axis A—A of the latch system **12**. The inner surface of the sidewalls **32***c* also have a pair of integrally formed springs **40**, which are provided to bias the latch assembly **34** into a latched condition, described hereinafter.

It is noted that the rightward facing end of the latch housing **32** is generally planar so as to abut the leftward facing end of the catch housing **30** in a face-to-face manner. It is further noted that the leftward facing end of the latch housing **32** is curved so as to provide a clean and unobtrusive exterior appearance. Naturally, the present invention is not limited to the particular ornamental appearance of the latching system **12**, and it is contemplated that numerous equivalent geometric variations may be devised with knowledge of the present invention and without departing from the scope and spirit of the present invention.

The latch housing **32** and catch housing **30** are generally symmetrical about the latch system longitudinal axis A—A, which extends lengthwise through the middle of the latch housing **32** and the catch housing **30**, as illustrated. As such, the upper and lower halves of the latch housing **32** are generally identical to one another while the upper and lower halves of the catch housing **30** are generally identical to one another. Although this symmetry is preferred for manufacturing, assembly, and aesthetic reasons, it is not mandatory. Rather, it is contemplated that the latching system **12** in accordance with the present invention could be made in an asymmetrical manner and, accordingly, the present invention is not to be limited to the symmetrical arrangement that is preferred and illustrated herein.

The latch assembly **34** includes a pair of arms **36** and an actuator **38**. The arms **36** are pivotally secured to the latch housing **32** and project laterally from the latch housing **32** so as to extend into, and be received within, the catch housing **30**. The actuator **38** is slidably secured to the latch housing **32** and is accessible via the elongated opening **32***a*' in the latch housing front wall **32***a*. The actuator **38** is operable to move the arms **36** between an engaged position, wherein the arms **36** may be latched to the catch housing **30**, and a disengaged position, wherein the arms **36** are unlatched from the catch housing **30**, as will be apparent from the following discussion.

The latch arms **36** are generally identical to one another, as illustrated, and each include an angled first portion **36***a* at a first end thereof, an enlarged second portion **36***b* at a second end thereof, an elongated body portion **36***c*, and a pivot pin **36***d*. The elongated body portion **36***c* extends between and interconnects the first portion **36***a* and the second portion **36***b*. The pivot pin **36***d* extends through the body portion **36***c* at a location near the union of the body portion **36***c* and the angled first portion **36***a*, and is rotatably secured to the latch housing front and rear walls **32***a*, **32***b*. When the latch arms **36** are pivotally secured within the latch housing **32**, the first portions **36***a* of the latch arms **36** are biased toward engagement with one another by the springs **40**, which, as noted previously, are preferably thermoplastic compression springs that are integrally molded with the latch housing sidewall **32***c*.

The springs **40**, which urge the latch arms angled first portions **36***a* away from the latch housing sidewall **32***c* and toward one another, may have other configurations or be provided by other means known in the art. For example, the springs may be separately formed and have ends that are

received within pockets formed in the angled first portions **36***a* of the latch arms **36** and the housing sidewall **32***c*, respectively.

With reference to FIG. **3**, the geometric configuration of the latch arms **36** will be described in more detail hereinafter. The arms **36** are elongated and are generally aligned along the longitudinal axis A—A of the latching system **12**, which extends through the latch housing **32** and the catch housing **30** and about which the latch and catch housings **32**, **30** are symmetrical, as described hereinbefore. The angled first portion **36***a* of the latch arms **36** provides a surface **36***a*' that faces vertically downwardly (upwardly) and defines a plane that is generally parallel to the axis A—A. From this surface, the latch arm first portion **36***a* extends diagonally (i.e., laterally and vertically) away from the axis A—A so as to provide a lateral surface **36***a*" disposed above (or below) the longitudinal axis A—A and facing toward the longitudinal axis A—A. The springs **40** engage the latch arms first portion **36***a* near the end thereof, as illustrated, so as to have maximum biasing leverage on the latch arms **36**. Thereafter, the latch arm **36** extends generally parallel to the axis (albeit with differing height dimensions) so as to define the elongated longitudinally oriented body portion **36***c* interconnecting the angled first portion **36***a* and the enlarged second portion **36***b*.

The latch arms' elongated body portion **36***c* terminates in the enlarged second portion **36***b*, which is disposed at the second end of the latch arm **36**. The enlarged second portion **36***b* has a stepped surface **36***b*' at a trailing edge thereof and a curved leading edge **36***b*". The stepped surface **36***b*' faces toward the first end of the latch arm **36** and defines a plane that is generally perpendicular to the axis A—A, as illustrated. The curved leading edge **36***b*" facilitates insertion of the latch arms **36** into the catch housing **30**, as will be apparent from the following discussion.

Each pivot pin **36***d* extends through the associated latch arm body portion **36***c* in a direction transverse to the longitudinal axis A—A and is disposed at a location near the intersection with the angled first portion **36***a*, as illustrated. Preferably, each of the latch arms **36** rotate or pivot about the associated pivot pin **36***d* while the pivot pin **36***d* stays generally stationary. Alternatively, each of the latch arms **36** may be integrally affixed to the associated pivot pin **36***d* and the pivot pin **36***d* may be rotatably received within the latch housing front and rear walls **32***a*, **32***b*. In this regard it is noted that several different techniques for securing the pivot pin **36***d* to the latch housing **32** are known in the art and may be used herein. For example, the ends of the pivot pins **36***d* may be simply staked or heat staked to the latch housing **32** so as to help integrate or unify the latch housing front and rear walls **32***a*, **3***b* into a complete, one-piece latch housing assembly, it being noted that the edges of the latch housing front wall **32***a* may also be welded or adhesively secured to the latch housing sidewall **32***c*, as discussed previously.

The actuator **38** is received between the latch arms **36** and is slidably movable within the latch housing **32**. Preferably, the actuator **38** includes an actuator body portion **38***a*, a grip or knob portion **38***b*, and a connector portion (not shown). The knob portion **38***b* extends through the elongated opening **32***a*' in the latch housing front wall **32***a*. The connector portion preferably includes a slide (not shown) that is sized and adapted to fit between the rails **37** on the latch housing rear wall **32***b* so as to move laterally relative to the latch housing **32** and parallel to the axis A—A. Accordingly, the actuator **38** is guided and controlled during lateral or longitudinal movement, so as to provide for smooth operation of the actuator during opening and closing of the window **20**. Preferably, the actuator body portion **38***a* is closely received between the latch housing front and rear walls **32***a*, **32***b* with little play so as to maintain the actuator **38** in the desired alignment with the latch arms **36**.

It is contemplated that the connector portion may be provided in other forms, or that additional elements may be incorporated into the connector portion. For example, the connector portion may be provided by, or supplemented with, a screw (metal/plastic) or post (push-in bayonet-type plastic pin) that extends through a slotted opening or elongated slot (not shown) in the latch housing rear wall **32***b* so as to prevent the actuator body **38***a* from being disassociated with the latch housing **32** while permitting the actuator **38** to slide lengthwise (parallel to the axis A—A) along the slot in a guided fashion and with a predetermined stroke or throw. Likewise, two or more posts and associated slots, disposed on opposite sides of the axis A—A may be provided to prevent the actuator from pivoting or becoming misaligned during use. As will be appreciated from the foregoing, it is considered apparent that further alternative or supplemental means to slidably secure the actuator **38** to the latch housing **32** will be known to those skilled in the art and may be used interchangeably without departing from the scope and spirit of the present invention.

The actuator body portion **38***a* is generally diamond shaped and is manually movable lengthwise by applying a pulling or pushing force on the actuator knob portion **38***b*. Clearly, the present invention is not limited to an actuator **38** having the illustrated shape. However, the peripheral shape of the left end of the actuator body portion **38***a* is preferably closely matched to the orientation of the angled first portion **36***a* of the latch arms **36** and, more specifically, the lateral surface **36***a*" of the angled portion **36***a*, so as to facilitate pivotal movement of the arms **36** against the biasing force of the springs **40**.

Accordingly, when the latch arms **36** are in the engaged position (FIG. **3**), the actuator body **38***a* may be spaced a short lateral distance from the arms' angled portion **36***a* and slightly out of engagement with the lateral surface **36***a*". However, upon sliding of the actuator **38** (leftward in FIG. **3** along the rails **37** toward the position shown in FIG. **4**), the actuator body portion **38***a* engages the lateral surfaces **36***a*" of the angled first portion **36***a* of the latch arms **36**, and thereby causes the arms **36** to rotate or pivot about the axis of the pivot pins **36***d* and moves the stepped surfaces **36***b*' provided by the latch arms' enlarged second portions **36***b* out of engagement with the engagement surface **30***h* provided by the catch housing **30**. Once the latch arms **36** are free of the engagement surface **30***h*, and assuming that the actuator **38** is in engagement with the left edge of the elongated opening **32***a*' in the latch housing front wall **32***a*, application of further lateral (leftward) force will cause the center window **20** to slide away from the right window **16**. Therefore, the present invention permits one-handed unlocking and opening of the sliding center window **20**.

When the center window **20** is thus opened, releasing the knob portion **38***b* causes the actuator **38** to move rightwardly under the influence of the springs **40** and thereby permits the latch arms **36** to return to their normal position extending generally parallel to the axis A—A. Thus, there is a period of lost motion in which the actuator **38** slides (rightward in FIG. **4** along the rails **37** toward the position of FIG. **3**) relative to the latch housing **32** toward the right window **16**, while the latch housing **32** and the center window **20** remains stationary relative to the right window **16**. Subse-

quent force on the knob portion **38***b* in a closing (rightward) direction will first force the actuator **38** to the right end of the elongated slot **32***a*' formed in the latch housing front wall **32***a*. Thereafter, the rightwardly directed lateral force applied to the actuator knob **38***b* causes the latch housing **32** and the center window **20** to move together with the actuator **38** toward the right window **16**.

When the center window **20** is almost closed against the right window **16**, the second portion **36***b* of the latch arms **36** enters into the opening at the left end **30***d* of the catch housing **30**. The curved leading edge **36***b*" provided by the latch arms' second portions **36***b* slidably and cammingly engages the catch housing upper and lower walls **30***e*, **30***f*, causing the second portions **36***b* to move toward one another as the latch arms **36** pivot about the pivot pins **36***d*. The second portions **36***b* slide along the inner surfaces of the catch housing upper and lower walls **30***e*, **30***f* until they snap into the slotted openings **30***g*. As such, the latch housing **32** is in abutting engagement with the catch housing **30**, and the stepped surfaces **36***b*' are in engagement with the engagement surface **30***h*, effectively trapping the latch arms **36** in position and preventing further lateral movement of the center window **20**.

Insofar as the latch arms' enlarged second portions **36***b* are trapped between the catch housing front and rear walls **30***a*, **30***b*, the latch is protected from being disengaged by inward pushing or deformation of the center window **20**, increasing the effectiveness of the latching system at preventing unwanted opening of the center window **20** from outside of the vehicle.

It is noted that, when the latch arms **36** are received within the catch housing **30** such that the latch assembly **32** is in the locked position, the latch arms **36** are close to or in engagement with the latch housing sidewall **32***c* and the catch housing upper and lower walls **30***e*, **30***f*. However, since the location of the pivot pin **36***d*, the intersection of the angled first portion **36***a* with the body portion **36***b*, and the location of the top/bottom openings **32***d* in the latch housing sidewall **32***c* are carefully chosen relative to one another, when the latch arms **36** are pivoted into the disengaged position, a portion of the latch arms **36** (i.e., the intersection of the body portion **36***b* and the angled portion **36***a*) may be permitted to extend through the latch housing openings **32***d*. Naturally, the openings **32***d* in the latch housing sidewall **32***c* that permit the latch arms **36** to pivot may be dispensed with by making the latch housing **32** slightly larger in height dimension than the catch housing **30**.

Although the present invention has been described with particularity herein, it is considered apparent that the scope of the invention is not limited thereto. Rather, numerous modifications, improvements, and substitutions of parts may be resorted to without departing from the scope and spirit of the present invention. For example, although the presently preferred latch assembly includes a pair of latching arms that work in tandem, it is contemplated that a single latch arm may be used instead with similar, if not identical, functionality. Further, although the actuator body is shown to be generally diamond-shaped, it is contemplated that many other shapes may be used with equal functionality. Also, it is contemplated that the actuator connector portion may be trapped by the rails so as to form a dovetail-type connection therewith. As such, one or more of the connector portion and rails **37** may be L-shaped in cross-section so as to permit movement of the actuator in only the longitudinal direction.

What is claimed is:

1. A window assembly, comprising:

a fixed member;

a sliding window that is slidably movable relative to said fixed member;

a catch housing secured to the fixed member;

a latch housing secured to the sliding window; and,

a latch assembly movably secured to said latch housing and releasably secured to said catch housing, said latch assembly comprising:

first and second latch arms, each of said first and second latch arms being biased into engagement with said catch housing and including a first actuated end, a second latching end, and an elongated body portion extending between said first actuated end and said second latching end;

a first pivot pin extending through the elongated body portion of said first latch arm to pivotally secure the first latch arm to the latch housing;

a second pivot pin extending through the elongated body portion of said second latch arm to pivotally secure the second latch arm to the latch housing and,

a latch actuator, said latch actuator being movable relative to said latch housing and into engagement with the actuated ends of said first and second latch arms so as to pivotally move said latch arms about said pivot pins and thereby move the latching ends of said first and second latch arms out of engagement with said catch housing so as to permit said sliding window to be slidably moved away from said fixed member, said latch actuator being slidably secured to said latch housing and movable relatively toward and away from said catch housing.

2. The window assembly according to claim **1**, wherein said catch housing includes a rear wall secured to said fixed member, a front wall, an upper wall, and a lower wall, and wherein said front, rear, upper, and lower walls cooperate to define an end opening through which the latch arms extend.

3. The window assembly according to claim **1**, wherein said latch housing includes rails that guide the latch actuator as the latch actuator is slidably moved.

4. The window assembly according to claim **1**, wherein said latch actuator is disposed between said first and second pivot pins.

5. The window assembly according to claim **1**, wherein said first and second latch arms protrude from said latch housing.

6. The window assembly according to claim **1**, wherein said catch housing includes upper and lower walls, and where said catch housing upper and lower walls define the slotted openings that receive the latching ends of the first and second latch arms.

7. The window assembly according to claim **1**, wherein said latch actuator is slidably secured to the latch housing at a location relatively between said first and second latch arms, and is adapted for linear movement into and out of engagement with the actuated ends of the latch arms.

8. A window assembly, comprising:

a fixed member;

a sliding window that is slidably movable relative to said fixed member;

a catch housing secured to the fixed member, said catch housing including a plurality of walls, and wherein at least two opposing walls of the catch housing define slotted openings;

a latch housing secured to the sliding window; and,

a latch assembly movably secured to said latch housing and releasably secured to said catch housing, said latch assembly comprising:

first and second latch arms, each of said first and second latch arms being biased into engagement with said catch housing and including a first actuated end, a second latching end, and an elongated body portion extending between said first actuated end and said second latching end; and,

a latch actuator, said latch actuator being slidably movable relative to said latch housing into engagement with the actuated ends of said first and second latch arms so as to pivot said first and second latch arms out of engagement with said catch housing and thereby retract said latching ends from said slotted openings in the catch housing and permit said sliding window to be slidably moved away from said fixed member.

9. The window assembly according to claim **8**, further comprising a biasing spring associated with said latch arms and serving to bias said latch arms' latching ends into engagement with said catch housing.

10. The window assembly according to claim **8**, wherein each of said first and second latch arms are pivotally mounted to said latch housing via a pivot pin extending through said elongated body portions.

11. The window assembly according to claim **10**, wherein said latch actuator is slidably secured to the latch housing at a location relatively between said first and second latch arms, and is adapted for linear movement into and out of engagement with the actuated ends of the latch arms.

12. The window assembly according to claim **11**, wherein said catch housing includes a rear wall secured to said fixed member, a front wall, an upper wall, and a lower wall, and wherein said front, rear, upper, and lower walls cooperate to define an end opening through which the latch arms extend.

13. The window assembly according to claim **8**, wherein said catch housing includes a rear wall secured to said fixed member, a front wall, an upper wall, and a lower wall, and wherein said front, rear, upper, and lower walls cooperate to define an end opening through which the latch arms extend.

14. A latch assembly for a slidable window, comprising:

a catch housing adapted to be secured to a stationary member and defining an end opening and a pair of opposed slotted openings, each of said slotted openings being at least partially defined by an edge surface;

a latch housing adapted to be secured to the slidable window; and,

a latch assembly, said latch assembly being received within said latch housing and being releasably secured to said catch housing, said latch assembly comprising:

first and second latch arms, each latch arm having a first actuated end, an elongated body portion, and a second latching end, wherein said actuated ends are received within said latch housing, said body portions project from said latch housing, and said latching ends are disposed outside of said latch housing, said latch arms being pivotally secured to said latch housing and being biased so as to urge said latching ends through an associated one of said slotted openings and into engagement with said an associated edge surface; and,

a latch actuator, said latch actuator being slidably secured to said latch housing and slidably movable, in a direction relatively away from said catch housing, against the actuated end of each latch arm so as to pivot the latching ends of each latch arm out of said slotted openings and out of engagement with said edge surfaces so as to release said sliding window from said fixed window.

15. The latch assembly according to claim **14**, wherein said catch housing includes a rear wall secured to said fixed member, a front wall, an upper wall, a lower wall, and an end wall, and wherein said front, rear, upper, and lower walls cooperate to define the end opening through which the first and second latch arms extend and wherein said upper and lower walls define the opposed slotted openings.

16. The latch assembly according to claim **14**, further comprising a biasing spring engaged with said actuated ends of said latch arms and serving to bias said latching ends of said latch arms away from each other, through said slotted openings and into engagement with said edge surfaces catch housing.

17. The latch assembly according to claim **14**, further comprising a first pivot pin extending through the eleongated body potion of said first latch arm and a second pivot pin extending through the elongated body portion of said second latch arm and wherein said first pivot pin and second pivot pin are received in said latch housing, said first pivot pin defining an axis about which said first latch arm rotates and said second pivot pin defining an axis about which said second latch arm rotates.

18. A method for operating a sliding window, said sliding window being laterally movable between a closed position adjacent a fixed member and an open position spaced from said fixed member, comprising the steps of:

providing a latch housing affixed to said sliding window;

providing a catch housing affixed to said fixed member, said catch housing having a pair of opposed walls that define slotted openings;

providing a latch assembly, said latch assembly being operable to releasably secure said latch housing to said catch housing and including first and second latch arms and a latch actuator, each of said latch arms having an actuated end and a latching end that are interconnected by an elongated body portion, said actuated ends being received within said latch housing while said elongated body portions project from said latch housing such that said latching ends are disposed outside of said latch housing, said latch actuator being slidably secured to said latch housing at a location intermediate said latch arms and being movable laterally relative to said latch housing and said catch housing and against said latch arm actuated end so as to move said latch arm latching end out of engagement with said catch housing, and wherein, when said latching ends are engaged with said catch housing, comprising the sequential steps of:

a) applying lateral force to said latch actuator and thereby moving said latch actuator laterally away from said catch housing while said latch housing remains stationary;

b) engaging said latch actuator with each of the actuated ends of the latch arms and thereby moving said actuated ends relatively away from one another;

c) pivoting each of said latch arms about an axis so as to move each of said latching ends out of engagement with said catch housing; and,

d) applying further lateral force to said latching actuator so as to move said window laterally away from said fixed member.

19. The method according to claim 18, wherein when said latching ends of said latch arms are disengaged from said catch housing, comprising the sequential steps of:

e) applying lateral force to said latch actuator so as to move said latch actuator laterally toward said catch housing while said latch housing remains stationary;

f) applying further lateral force to said latch actuator and thereby causing said latch actuator and said latch housing to move laterally toward said catch housing;

g) inserting said latching ends of said latch arms into said catch housing;

h) engaging the latching ends of said latch arms with said catch housing and thereby causing said latching end to slide over an interior surface of said catch housing;

i) snapping the latching ends of said latch arms into the slotted openings formed in said catch housing to thereby engage said latching end with said catch housing.

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